

or





Installation and Usage Instructions

## **Form Wash**

Desktop Stereolithography Print Cleaner



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Read and understand this manual and its safety instructions before using the Form Wash. Failure to do so can result in serious injury or death.

### DISCLAIMER

Form Wash and its related products are a clear, clean, and effective cleaning solution. The information provided in this document is general in nature and does not constitute a warranty of any kind. The manufacturer is not responsible for any damage or injury that may occur as a result of the use of Form Wash. The manufacturer is not responsible for any damage or injury that may occur as a result of the use of Form Wash. The manufacturer is not responsible for any damage or injury that may occur as a result of the use of Form Wash.

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### DOCUMENT REVISIONS

Date	Version	Document Changes
Oct 2015	REV 00	Initial release of Form Wash and Safety Manual
Nov 2019	REV 01	Initial release

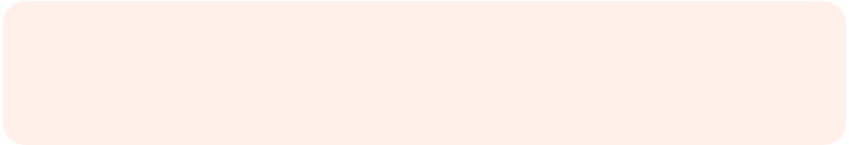
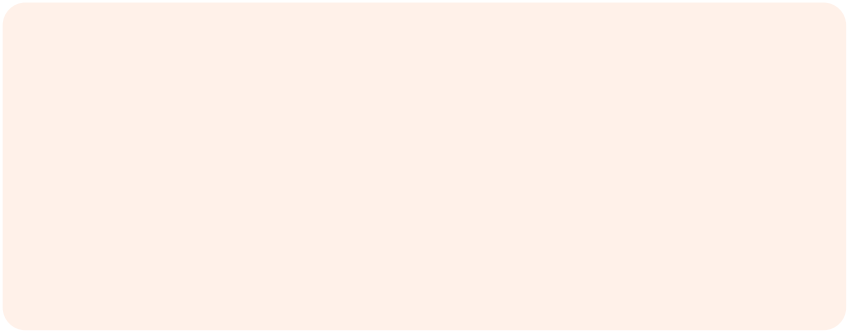
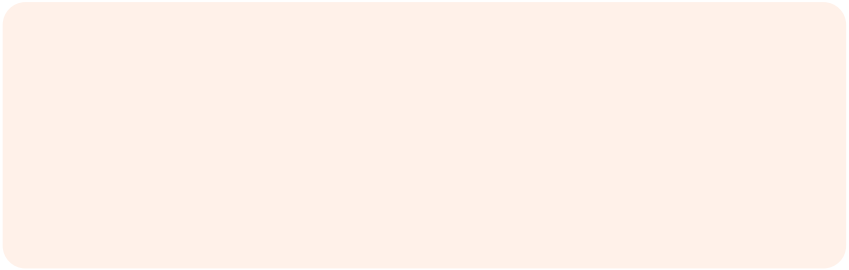
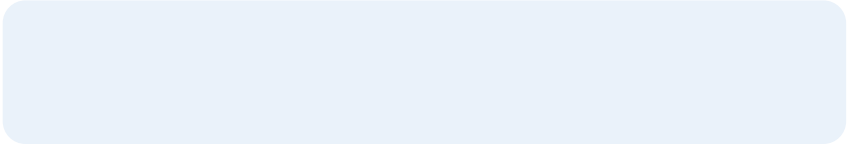
# 1. Preface

Congratulations on your purchase of the Frisch-Waugh-Olkin (FRO) software package. This software package is designed to help you understand the relationship between the variables in your data set. The FRO software package is a powerful tool for analyzing data and understanding the relationship between variables. The FRO software package is a powerful tool for analyzing data and understanding the relationship between variables.





2. q0 0307.7115 -QQhf-50.01i MOSFEFnM715 43.80onQh11 572.1384



## 2.2 Product Elements

Platform Mount H d \_he  
b i d a f r he a h i g  
a s \_he a f r .

Basket Re ab e c a i e r  
h d a s a h i h \_he  
b i d a f r .

Basket Mount A i g e h  
e c r e \_he b a e r a i e  
a d e r

Outer Lid L i e  
e a r a i . Kee \_he i d c e d

Rab e ce Qa i e h

## 2.3 Technical Data

Shipping Weight	9.0 g (20 b)
Product Weight	6.7 g (14.5 b)
Shipping Dimensions	33.0 35.4 45.6 c (14 14 18 l)
Product Dimensions	26.2 29.3 34.0 c (10.3 11.5 13.4 l) Height height: 64 c (25.2 l)
Minimum Space Requirement	38.9 41.9 64.0 c (15.3 16.5 25.4 l)
Power Requirements	100 240 V 2.0 A 50/60 H 50 W
Electrical Safety Standard	60950-1:2005+A1:2009+A2:2013 (and applicable standards)
Sound Emission	Does not exceed 70 dB(A).
Bucket Volume	8.6 L
Maximum Part Size	14.5 14.5 17.5 c (5.7 5.7 6.9 l)
Operating Temperature	Designed 18 28 C (64 82 F)
Agitation Method	Magnetic agitator

## 2.4 Form Wash Controls

When completed, the bucket is ready for use. The Form Wash is ready to use. The bucket is ready to use. The Form Wash is ready to use.

The following are available for the Form Wash:

**Start:** Lift the lid and add the agitator.

**Open:** Raise the lid.

**Sleep:** Lift the lid. The automatic start is ready.

**Time:** Press the button and the time is displayed. Check each area recorded and before beginning to use.

After beginning to use, the agitator is ready to use.

**Pause:** Press the button and the agitator is ready to use.

**End:** Close the agitator and the agitator is ready to use.



### 3.1.3 Resin

Resin is a flammable liquid. It is a colorless to light yellow liquid. It is a solid at room temperature. It is a liquid at room temperature. It is a solid at room temperature. It is a liquid at room temperature.



Wear gloves whenever handling liquid resin or solvents. If swallowed, immediately call a poison center or medical professional.

General information: This resin is a flammable liquid. It is a colorless to light yellow liquid. It is a solid at room temperature. It is a liquid at room temperature. It is a solid at room temperature. It is a liquid at room temperature.



Never ingest resin in liquid or solid form.



Always consult the SDS (Safety Data Sheet) as the primary source of information to understand safety and handling of Formlabs materials. Combinations of resin and solvent should be handled according to the restrictions of both. For questions, consult the appropriate SDS(s).

### 3.1.4 Radio Interference

This resin has been tested and found to be compliant with the FCC Part 15. The resin is designed to be used in a radio frequency environment. It is a colorless to light yellow liquid. It is a solid at room temperature. It is a liquid at room temperature. It is a solid at room temperature. It is a liquid at room temperature.

Change the resin to a different resin. The resin is designed to be used in a radio frequency environment. It is a colorless to light yellow liquid. It is a solid at room temperature. It is a liquid at room temperature. It is a solid at room temperature. It is a liquid at room temperature.



Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### 3.1.5 Solvents



Formlabs does not manufacture solvents. Always consult the safety data sheet (SDS) from your solvent supplier as the primary source of information for storage and handling.

Consult the resin manufacturer's SDS, which has the resin's SDS. It is a colorless to light yellow liquid. It is a solid at room temperature. It is a liquid at room temperature. It is a solid at room temperature. It is a liquid at room temperature.







### 4.3.1 Assemble Siphon Pump

Take the inlet hose, connect the handle (A) to the rigid body (B) of the inlet hose. Use the inlet hose as a guide to install the siphon pump. The inlet hose is designed for a ferrule diameter of 1/2 inch. This is the diameter of the ferrule on the end of the connector. The ferrule is the part of the handle.

### 4.3.2 Fill Wash Bucket with Solvent

Fill the Form Wash:

1. Open the lid.
2. Pour in the solvent into the wash bucket. Use a measuring cup (7.8 L) and a liter (8.6 L) to measure. Form Wash is not flammable, but it is a solvent.

### 4.3.3 Connect Power Supply

Connect the power cable to the Form Wash and a power source.



NOTICE

The Form Wash includes a USB port to allow for firmware updates.

#### 4.3.4 Calibrate the Hydrometer (IPA Only)

If the hydrometer is not calibrated, the IPA (readings) will be inaccurate. To calibrate the hydrometer, the hydrometer should be checked and adjusted.

##### To calibrate the hydrometer:

1. Hold the hydrometer at the top of the scale.
2. Side the hydrometer at the top of the scale.
3. Leave the hydrometer for 10 minutes. The air bubbles will go up and the hydrometer will be checked.
4. Set the hydrometer to the target area.

The hydrometer reading will be checked. The hydrometer should be calibrated. Check the hydrometer and adjust if necessary.

#### 4.4 Transporting the Form Wash

Refer to **2.2 Technical Specifications** for more details. Keep the packaging dry and clean.

##### The Form Wash complete packaging kit consists of:

- 1 User card and case
- 1 Form Wash kit
- 1 Form Wash kit, high density polyethylene
- 1 Recycled plastic bag
- Plastic wrap



Original packaging may be required for warranty service. Do not ship with solvent inside the bucket. Solvent left inside the Form Wash can damage the unit in transit, which may lead to additional fees or void the warranty.

##### To prepare to transport the Form Wash:

1. Remove the Form Wash kit.
2. Wrap the Form Wash kit in plastic wrap.
3. Remove the Form Wash kit from the bag.
4. Place the Form Wash kit in the bag.
5. Place the Form Wash kit in the bag.
6. Label the bag.
7. Close the bag.
8. Wrap the bag in plastic wrap and place in the shipping container.

9. Reassemble the base.
10. Place the base on the front of the machine.
11. Place the Front Wash Arm on the front of the machine.
12. Place the spray arm on the Front Wash Arm.
13. Seal the base lid.



**NOTICE**

When shipping a machine to Formlabs for service, do not ship the accessory tools or the power supply. Accessories will not be returned after service. The product's original packaging is required for warranty service. Contact other authorized resellers for unique guidance on shipping requirements.





### 5.2.4 Collect Prints

Remove the build surface from the base, de-embed the attached 5.2.1  
*Insert Print.*

### 5.2.5 Finish Your Print

After a high accuracy build, remove the build surface where a  
= , Gra er; r; huc er.  
Once each axis is a head dried, check the electronic 'strapping' g  
L = f r ab .c .P strapping i : a f r Sa dard Re i a dra ined f r a her  
aeria = achie e heir i a r exie .  
After strapping (if necessary) the huc er has a e i L r Fi h Kl = caref  
ic the = aached the az( ), S = ca a bere ed bef re strapping, b =  
a a ar L der e L re igh a d hea h = e r a L = .



Wear safety glasses to protect eyes from dislodged fragments of supports.

Use caution when handling the parts.

## 5.3 Considerations for Specific Geometries

Consider the geometry of each axis head and the attached  
electronic. Take care when handling the attached, and  
handle, the attached chamber. Handle the attached  
electronic.

### 5.3.1 Hollow Geometries

Design the drainage hole of the design. Design the high  
precision hole in the electronic. Take care  
when handling the attached base. Check the attached  
the chamber before printing the attached face.

### 5.3.2 Internal Channels

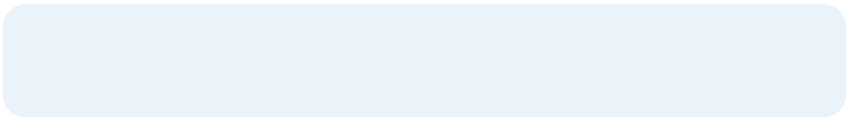
The channel, channel, and design, and drainage  
electronic. Use the attached electronic. After printing  
the electronic drainage.

### 5.3.3 Large Parts

Parts are the base of the design. Check the  
the base of the design. Check the  
the attached base. Parts have the  
a design. When the design is a high design, the  
the attached design (5.7 5.7 6.9).

### 5.3.4 Concave Surfaces, Printed and Washed on the Build Platform

Head and channel design, and design, and design  
are the design, the attached design  
design. Consider the design of the  
design. Design the design of the  
design.



To check the heater, the electrical label for each tag is:

1. Under the label, the **Sleep** or the label is a dc voltage of the Frr Wash.
2. Or the heater is id.
3. From the relevant calibrated heater, the electrical label is a high voltage. Note the tag, the original is the tag.

When calibrated for the original, the heater should be a tag. The heater is a tag for the heater. A heater is a tag for the heater. The heater is a tag for the heater. The heater is a tag for the heater.

From the heater, the heater is a tag for the heater. The heater is a tag for the heater. The heater is a tag for the heater.

#### 5.4.3 Powering Off the Form Wash

The Form Wash is a tag for the heater. The heater is a tag for the heater. The heater is a tag for the heater. The heater is a tag for the heater.

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The Form Wash is a tag for the heater. The heater is a tag for the heater. The heater is a tag for the heater.

#### 5.4.4 Updating the Firmware

The Form Wash is a tag for the heater. The heater is a tag for the heater. The heater is a tag for the heater.

#### 5.4.4 Upd5ting the Firmware









### 6.5.1 Updating the Form Wash Firmware

Firmware updates are required to ensure the best performance. The PreFirmware updates are available for each version.

#### To update the firmware:

1. Connect the Form Wash to a USB cable and connect the cable to the PreFirmware.
2. Launch the Form Wash/CreU software on the PreFirmware and check for updates.
3. When the updates are detected, click **Update Firmware**.
4. The update will be automatic. The update will take approximately 20 minutes.



NOTICE

Do not disconnect the USB or power cables during the update.

5. **Firmware Up To Date** message will be displayed. Select **Done** to close the message.
6. Restart the Form Wash.
7. Select **Quit** to exit the software.

### 6.5.2 Replacing Solvent

Use the following procedure to replace the solvent in the Form Wash:

Step 1: Remove the solvent from the Form Wash.

Step 2: Add the solvent to the Form Wash.

Step 3: Fill the Form Wash.

Follow the following procedure to replace the solvent in the Form Wash. The solvent is a chemical and can be harmful if it comes in contact with your skin or eyes. Use proper safety procedures when handling the solvent.

#### 1. Remove the wash bucket and inner lid

Remove the inner lid and the siphon pump from the wash bucket. Lift the wash bucket from the Form Wash and place it on a flat surface. Remove the siphon pump from the wash bucket and place it on a flat surface.

#### 2. Use the siphon pump to remove solvent from the wash bucket

The siphon pump will automatically start to pump solvent from the wash bucket into the receiving container. The siphon pump will continue to pump solvent until the solvent level in the wash bucket is equal to the solvent level in the receiving container.

When the solvent level in the wash bucket is equal to the solvent level in the receiving container, the siphon pump will stop. Gradually raise the wash bucket until the solvent level in the wash bucket is above the solvent level in the receiving container.



NOTICE

Watch the siphon pump after initiating flow. The flow will continue automatically as long as the source container's fill level remains elevated above the receiving container.



# 7. Troubleshooting and Repair

For detailed guidance on all the above, each refer to the relevant section.

## 7.1 Restarting with a Power Cycle

If the device is free of any other issues, the following steps should be followed to restart the FR-Wa h:

1. Unplug the FR-Wa h.
2. Wait for a minimum of 10 seconds before plugging it back into the power outlet.
3. Reconnect the FR-Wa h to the power outlet.

## 7.2 Troubleshooting

The cause of any error or abnormal operation of the FR-Wa h, refer to the following table for error codes, and their corresponding solutions. Contact the manufacturer if the error persists after following the above steps. Contact the manufacturer if the error persists after following the above steps.

ERROR	CAUSE	SOLUTION
Overload error	Overloading the FR-Wa h.	Contact the manufacturer for the correct load capacity.
Underload error	Malfunctioned inverter Debris on the inverter board	Check for electrical debris on the inverter board. Check the inverter board for any loose components.

### 7.3 Disassembly and Repair

All steps that involve opening the Form Wash and/or investigating internal components should be done by skilled persons under the guidance of Formlabs or a certified service provider.

Contact Formlabs or a certified service provider to receive air filter and a data sheet. The filter, e-ink, and a-aria are needed for repair.









# 10. Glossary

TERM	MEANING
Ba e	H d a e a h l h e b i d a f r .
Ba e L	A i g e h e c r e h e b a e r a i e a d e r .
Di a	The di a h a e , i e , e e r a r e , a d i i f r c i g r i g h e F r Wa h .
Di a r i b b i c a b e	A a , e i b e c a b e c i i e c h e d i a a e b e h e h e r b a r d .
H d r e e r	U e a h d r e e r e a r e h e e r e i c i c e r a i i ( b a e d i r e L c a i b r a i i f i r e h e ) .
I e e r	A i e e r a h e b e f h e a h i b c e a e e h e F r Wa h l g a g e a d a g i a e h e e i d r i g h e a h c c e .
I e e r e r	The i e e r e r , c a e d i h e b a e f h e F r Wa h l e a g e e h e i e e r i h e a h i b c e .
I e r i d	A h i g e d , e c i d a r i d e a d c e e c i a i e h i e a l g a e b e e r e d r r a i e d f r h e b c e .
K i b	The i b i h e r i a r i e f a c e d e i c e f r h e F r Wa h . I r h e i b a i g a e h e d i a e . P r e h e i b e e e c a f e a r e r e i g .
L i d h i g e	The i e r a d e r i d a r e h i g e d , a l g h e e a d c e i a a i c a a h e a f r l i a d b a e L i r a i e a d e r .
M a g e i c c h	The a g e i c c h a e h e i e e r e h e F r Wa h l h a e c h a i c a c i e c i .
M h e r b a r d	The h e r b a r d i h e a i c i c k l r h e g h i c h a e i h e F r Wa h c l i c a e .
Q e r i d	L i l e e a r a i i . K e e h e i d c e d h e i l e .
P a f r L	H d h e b i d a f r h e a h i g a e i h e a f r .
P e r t	P r i d e e r e h e F r Wa h . S e c i c a i i : 24 V , 2 A
S i h i L	The F r Wa h i c d e a a a i h i L l e d e r a f e r e e b e e h e a h i b c e a d a e e r a g e c i a i e r .
S e	N i c d e d . D i e L i d r e i f r r i e d a e L f a c e .
T e r a g e	The F r Wa h i c d e a e r a g e c a b i e e a c h i d e f h e l i l e e r e a e a h i g a c c e r i e .
U S B e	The F r Wa h c a c i e c a c l e r i a U S B . The e i c i e c e d h e h e r b a r d a d c a b e a c c e d f r h e b a c f h e a c h e .
W a h i b c e	A r e a b e c i a i e r i h e F r Wa h h d a a i l f 8.6 L f e . A r a i g i e e r a h e b e c i c a e h e e .
Z e e r e r	The F r Wa h Z e e r e r a e b r a i e a d e r h e a f r L i a d b a e L .

